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BEFORE THE FEDERAL COMMUNICATIONS
COMMISSION, Washington D.C.

MM Docket No. 99-25

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COMMENTS OF REC NETWORKS ON FCC 99-25

I. INTRODUCTION

1. *An Important Decision.* The Commission has before it, one of the most important decisions it will make in the 20th century. The creation of a low power broadcast radio service.
2. *We must work together with full-power broadcasters.* During RM-9208 and RM-9242, many have expressed their interest in LPFM. Some have expressed concern about additional signals in a very crowded FM band. Hopefully in 99-25, we would be able to make a viable radio service, which meets the needs of those future microbroadcasters as well as the incumbent FM licensees.
3. *The Commission has recognized the need for LPFM.* As the Commission noted in paragraph 11 of the NPRM, the agency has received over 13,000 inquiries in the past year from individuals and groups interested in starting a low power radio station. Some have even resorted to illegal means in an effort to get a radio station on the air.
4. *LPFM means diverse programming and training.* We feel that a Low Power FM (LPFM) service would introduce many new local voices to the airwaves. LPFM stations would also provide a good training ground for those interesting in advancing their careers in broadcasting just like how the amateur radio service has trained many people in radio electronics over the years.
5. *LPFM brings radio back to the local community.* Lower power LPFM stations, similar to the "LP100" and "Microradio" classes proposed by the Commission would serve urban and suburban areas with niche programming tailored to their communities. Local merchants and businesses would be able to reach their local audience for the first times at reasonable rates. News and information which would be considered "too local" by other stations could be broadcast by the local LPFM stations.
6. *LP-1000 can work in rural areas where full power facilities are not available.* LP-1000 stations would be able to serve rural areas with news and information, which is not being provided by nearby or "big city" stations. With relaxed adjacent channel restrictions, LP-1000 stations would be able to operate in areas which would not be eligible for full-power Class A facilities.

II. SPECTRUM CONSIDERATIONS

7. *We must make 87.5-87.9 available for LPFM.* Even though in our undocketed petition we asked for additional FM spectrum between 82-88MHz, we can understand that may not be technically feasible to launch the LPFM service in a timely manner. We would, however like to see the availability of 87.5 MHz (which we will refer to as "Channel 198"), 87.7MHz ("Channel 199") and 87.9MHz (Channel 200) to the lowest powered microstations in areas where interference to NTSC or DTV Channel 6 is not an issue. Most radios are capable of receiving these three frequencies therefore there would be no need for the general public to be required to purchase new radios to receive some of the microstations.¹
8. *Commercial use of the reserved band by LP-100 and microstations.* Because of the limited number of channels available in a given area as well as the limited reach of LP-100 and Microstations, these stations should be able to operate commercially in the reserved portion of the band (Channels 198-220). For the LP-100 and Micro class of stations, we are asking the Commission to not classify between commercial and non-commercial. To do so would cause a serious administrative and enforcement burden and would hinder the survival of some stations.
9. *LP-1000 should be subject to reserved band restrictions.* The higher-powered LP-1000 stations would be subject to many of the Part 73 rules and therefore should be subjected to the reserved band rules. LP-1000 stations can be classified commercial or non-commercial.

1 – Appendix F shows a list of FM radio receivers that we own and are capable of receiving channels 198, 199 and 200.

10. *LPFM access to Auxiliary Broadcasting Services.* On the subject of access to the Part 74 Auxiliary Broadcast Service, all classes of LPFM stations would be able to benefit from this service. LP-1000 stations could use studio-to-transmitter (STL) links to feed their output to nearby transmitter sites on short hills. All classes of stations would be able to benefit from remote pickup (RPU) stations. RPU stations would be used by LPFM stations for live high school sports, coverage of community events such as parades and street fairs and local on the spot of local news, weather and sports. This statement should not be construed that only LP-1000 stations should have access to STL frequencies, all LPFM stations should have access to these channels. We would like to see all Auxiliary frequencies above 152 MHz available for LPFM but would settle with access to the 450 & 455 MHz Auxiliary frequencies. If granted access to the RPU frequencies, we would use them for live coverage of high school football games and other live street events.

III. SPECTRUM PRIORITY

11. *The interference potential.* Of course we recognize the interference potentials that an LPFM service can cause, but we all need to work together to develop rules which would minimize interference. Due to the secondary nature of FM-100 and Microradio, the distance spacing proposed should protect the primary station from interference but it may not be necessary to impose a longer distance spacing restriction so the full power station won't cause interference to the LPFM station. After doing a site study on our location using the higher distance restrictions, we have found that many channels were denied because they co-channelled with Class C stations 200km away (just on the fringe), these stations are normally not receivable in the service area. For this reason, we will propose the distance spacing be enough to make sure the LPFM station does not cause interference with the full powered station.²
12. *LP-1000 should be primary.* For the LP-1000 service, we will support primary status. LP-1000 will protect and will be protected from other LP-1000 as well as full-powered stations. As mentioned in paragraph 16, we also propose to require LP-1000 stations to protect LP-100 stations physically located in a top-50 urban area.
13. *Other LPFM stations could be secondary.* For LP-100 and Micropower stations, we will support secondary status to full power domestic and foreign stations as well as LP-1000 stations except as shown in paragraph 16.

IV. OVERVIEW OF THE SERVICES PROPOSED

14. *LP-1000 for rural areas only.* We support the establishment of the LP-1000 service with the limitation that no LP-1000 station will be authorized within 100 km of the geographic center of a top-50 major metropolitan area.³ This will preserve spectrum in urban areas for lower power LP-100 and microradio class stations while preserving the LP-1000 service to provide a wider coverage to suburban and rural areas. We feel that this power level in a rural environment would be able to sufficiently reach its intended rural audience. . As shown in the Commission documents in this proceeding, many metropolitan areas would only be able to support a small number of LP-1000 stations if any at all. By restricting LP-1000 stations to rural areas, we make more channels available to LP-100 and micropower stations urban communities while keeping the LP-1000 service as an option for rural areas, which can not obtain Class-A facilities.
15. *LP-100 for urban and suburban areas.* The LP-100 service would be driven towards those who wish to provide a broadcasting service to their local community and surrounding area. Some LP-100 stations may be based out of commercial locations and residential locations where a 150-foot antenna would be feasible. The minimum power for LP-100 should remain at 50 watts. As mentioned before, all classes of LPFM stations would be able to operate commercially. LP-100 stations would be available nationwide (including rural areas).

2 – See Appendix A for our proposed distance spacing for LPFM stations.

3 – See Appendix B for a list of the Top-50 urban areas with their geographic coordinates.

16. *Rural LP-1000 should protect urban LP-100's.* We feel that LP-1000 stations should protect LP-100 stations located in the urban areas. In rural areas, the chances of interference between LP-1000 and LP-100 stations is greatly reduced. This provision will also prevent LP-1000 applicants from placing stations on the fringe of urban areas in an effort to broadcast into the urban area. Microradio stations would not be afforded any protection from LP-1000 stations.
17. *Protection to translators.* FM translators allow full-power stations to extend their signal to areas that are underserved by other local FM stations. Signals are delivered from the primary station to the translator through several means including monitoring the primary station's channel, monitoring the channel of another translator. In addition, Non-Commercial Educational stations may also use satellite or microwave to deliver their signal to a translator. We could understand the intentions of this regulation by allowing non-commercial stations to be able to deliver their signal to an area unreachable by other means due to terrestrial shielding. Unfortunately, this loophole allows non-local NCE-FM stations from, in some cases across the country, to broadcast their programs in other cities. For example, here in the Phoenix, AZ area, we have two translators like this; one rebroadcasts a signal from San Francisco and the other one broadcasts a signal from Twin Falls, ID. After doing a study on the translators in the State of Arizona, we have found 24 such translators rebroadcasting stations as far away as Pensacola, FL. We support the use of translators to allow NEARBY stations to rebroadcast their signal in underserved areas, but these satellite translators are not capable of tailoring their broadcast to the local broadcast area of each translator. We feel that a local signal should have priority over a very-long distance signal. We are proposing that FM-100 and Microstations must protect existing translators located within 400 km of the primary station based on the translator's engineering records as of the date of the release of the NPRM. For translators that are more than 400 km away from the proposed FM-100 or Microstation, the LPFM applicant must find an available frequency that would facilitate the operation of the LPFM station while preserving the service of the distant translator. If no such frequency can be found, the FM-100 or Microstation would have status over the distant translator and the translator must resolve the interference.
18. *"Translators" for LPFM.* We recommend that LPFM licensees be allowed to operate an additional station as a translator or booster within 15 km of their primary station if a need is shown that the additional station would fill a gap in the intended service area (such as a part of the city behind a mountain). Such translators and boosters would be licensed as "microradio" class and would be limited to 10 watts.
19. *The "Microradio" Service.* We fully support the establishment of a "microradio" service. This service would provide a maximum antenna height of 30m HAAT and a maximum power of 10 watts. As with the LP-100 service, we feel that microradio stations be allowed to operate commercial with no reserved channel restrictions. These microstations could be operated by small businesses, minority groups, individuals, hobbyists, churches, K-12 schools, shopping malls and local government. Many stations will operate full-time but some stations, such as those operated by hobbyists or used for special events may only operate part-time.
20. *Names of classes.* For administrative reasons as well as compatibility with the current FCC Engineering Database. FM-1000 stations should be referred to as Class A1, FM-100 stations should be referred to as Class D1 and Microradio stations should be referred to as Class D2.

21. *Transmitter certification.* On the subject of transmitter certification, we will support certification requirements for FM-1000 and FM-100. For Microradio, we must ask for an exemption for transmitters of less than 10 watts. Similar to that afforded to Class-D NCE stations.⁴ Transmitter certification should be a simplified and affordable process for the manufacturer. This will keep station start-up costs low and could promote new American small businesses to manufacture equipment for the LPFM industry. The LPFM industry would not benefit from manufacturers charging over-inflated prices for LPFM transmitters because of their certification.
22. *Control of transmitter purchases.* Even though we must control the purchase of transmitters to avoid additional illegal “pirate” operations, this should not be done by over-inflated prices. This should be done by requiring a valid construction permit (CP) or license before a transmitter can be purchased.
23. *Directional antennas.* LPFM should have the freedom to utilize directional antennas. For some stations, they may benefit if their signal is radiated in a specific direction. Directional antennas can also be used in border areas to prevent a signal from radiating into the foreign country.
24. *In regard to booster stations.* We feel that microstations (as well as FM-100) be secondary to new booster applications as in most cases, LPFM stations would not be authorized co-channel or first-adjacent channel to a nearby full-power station and since the booster would operate on the same channel, the LPFM station still be too close to both stations (primary and the booster).
25. *Special event, part time microradio stations.* We would like to see an arrangement where microradio stations (under 10 watts) can be licensed to public venues (such as sports complexes and downtown event areas) to operate part-time special event broadcasting. Multiple licensees in the same area could share the same channel in a time-share agreement. Only in a few cases could there be events happening at more than one venue in the same area, which would warrant the need for a microradio station. For example, here in the Phoenix, AZ area, we see the potential for part-time microradio stations for the following events:
- a. Downtown Phoenix Events (America West Arena, Bank One Ballpark, Downtown Events, Fabulous Phoenix 4th, etc.)
 - b. Downtown Tempe Events (Sun Devil Stadium, Wells Fargo Arena, Mill Avenue, Festival Of the Arts, Masquerade, Gammage Auditorium)
 - c. Rio Salado Area (Town Lake, proposed Rio Salado Crossing site, proposed Los Arcos sports facility).
 - d. North Scottsdale (Westworld, classic car auctions, Phoenix Open, TPC, other golf tournaments)
 - e. Turf Paradise racecourse.
 - f. Phoenix Greyhound Park.
 - g. Phoenix International Raceway.
 - h. Various baseball stadiums used for Major League spring training.
26. *Use of local frequency coordinators.* Instead of causing an administrative burden on the FCC for these low power FM-100 and microstations, we are proposing that all spectrum assignments and time-share agreements be administrated by a non-profit frequency coordinator within the top-50 markets. We talk more about frequency coordinators in paragraph 52.
27. *On third-adjacent channel protection.* Requiring all classes of LPFM stations to protect third-adjacent channels would seriously hamper the service nationwide. As mentioned before, with the design of modern receivers as well as the low power levels and the proposed reduced bandwidth of the stations under consideration, third-adjacent as well as second-adjacent channel protection is not necessary.

4- 73.508(c) The transmitter and associated transmitting equipment of each noncommercial educational FM station licensed for transmitter power output of 10 watts or less, although not required to meet all requirements of Sec. 73.317, must be constructed with the safety provisions of the current national electrical code as approved by the American Standards Association. These stations must be operated, uned, and adjusted so that emissions are not radiated outside the authorized band causing or which are capable of causing interference to the communications of other stations. The audio distortion, audio frequency range, carrier hum, noise level, and other essential phases of the operation which control the external effects, must be at all times capable of providing satisfactory broadcast service. studio equipment properly covered by an underwriter's certificate will be considered as satisfying safety requirements.

28. *IBOC and keeping the current FM band analog.* We feel that there is no future for IBOC. Unlike the DTV proceedings, proponents of IBOC are asking for a digital service as well as a compatible analog service with a bandwidth, which could be wider than what they are currently allocated. If IBOC can be achieved within the currently assigned bandwidth of a FM channel while maintaining a quality analog FM signal, then second adjacent channel interference should not be an issue. The Commission should act on this proposal as if the FM broadcast band remains analog.
29. *LPFM does not need subcarriers.* As a potential licensee of LPFM, We are willing to give up my ability to provide sub-carrier audio (SCA) services by reducing bandwidth as long as I am able to provide a stereo service with frequency response on the main output channels similar to existing full power and translator stations and not be subject to second-adjacent channel restrictions (at the LP-100 and micropower levels).

V. OWNERSHIP AND ELGIBILITY

30. *Cross-ownership of full power broadcast and LPTV.* We feel that cross-ownership of full power radio & TV and low power TV (LPTV) with LPFM should be strictly prohibited. This restriction includes NCE-FM and Educational-TV licensees. This provision will prevent LPFM stations to be used as "satellite translators" for either non-commercial or commercial enterprise.
31. *LPFM in exchange for AM stations.* We support the proposal to allow AM licensees to an operate LPFM station contingent of divesting their AM channel only if a low-power AM broadcast service was established to provide daytime and limited nighttime service on divested AM channels.
32. *Cross-ownership with other media.* We feel that cross-ownership by cable television companies, MMDS providers, daily newspapers, weekly newspapers and facilities-based Internet service providers should be prohibited as these groups already have ample means of mass communications.
33. *Technical qualifications of LPFM licensees.* All LPFM licensees should be technically qualified. Each licensee should specify a "technical contact" who holds an FCC General Radiotelephone Operator's License or an FCC Amateur Radio Service License with a minimum class of General. Having such a technical contact will prevent a lot of frivolous and technically defective applications. In cases where LPFM stations are licensed to individuals, the technical contact can be the same person as the licensee.
34. *One to a market.* Since the Commission is not proposing a low-power AM service, a licensee should be able to own one LPFM and one relay station within their market. As mentioned in Paragraph 18 of these comments, we are suggesting a "donut zone" where a licensee could hold any class LPFM license (subject to the rural restriction on LP-1000 as proposed earlier in these comments) and a microradio class station within 15 km of the primary station to relay the programs of the primary station. An LPFM licensee would be prohibited from owning any LPFM stations location between 15 and 200 km of their other LPFM stations.
35. *National ownership.* National ownership of stations should be completely discouraged. For this reason, we are proposing that a licensee can own a maximum of five (5) LPFM stations within the entire FCC jurisdiction subject to the "donut zone" rules mentioned in paragraphs 18 and 34.

36. *Residency requirements.* We feel that this is very important to the success of an LPFM local service. We fear that if there were no residency requirements and/or no restrictions on national ownership, the LPFM service would deteriorate to a service consisting of “translators” relaying satellite services with little or no local programming. Similar to what happened to LPTV in many urban areas. For this reason, we ask that LPFM licensees live within 50 km of one of their licensed stations.
37. *In regards to unlicensed operations.* As proposed by the Commission, former unlicensed broadcasters who have been caught and are on record with the Commission would be subject to the same character qualifications to hold an LPFM license. The same goes for violators of full-power, amateur, private radio services as well as other Commission regulated services. For current unlicensed operators who voluntarily cease operations when LPFM rulemaking is established, a “don’t ask, don’t tell” policy would be in effect. The FCC will not ask licensees if they were involved with illegal broadcast operations at the time their application is being filed.

VI. SERVICE CHARACTERISTICS

38. *Local-origination programming requirements.* We feel that an LPFM station should be allowed to broadcast a mixture of local and network programming. We should also encourage LPFM stations to use STL and RPU links to link stations together for local network and emergency broadcasting. Many LPFM stations will serve minority audiences and due to the fact that shortwave broadcasts can not be received too well in multiple dwelling units, LPFM stations should be able to re-transmit the satellite signals of international broadcasters (with the consent of the broadcaster, of course.) for a portion of their broadcast day. The Commission is proposing to prohibit LPFM from operating as a translator. What is to stop an LPFM station from rebroadcasting a satellite service that is not a broadcast station 24 hours a day? This is a loophole that must be closed-up. We are suggesting that in a broadcast day, at least 8-hours of programming between 7AM and 10PM local time Monday through Friday must be locally originated or originated from a location within 50 km of the station. There will be no local origination restrictions between 10PM and 7AM Monday-Friday as well as any time during the weekends. This would allow a station to operate with a minimal paid and/or volunteer staff yet maintain the local integrity of the LPFM service. We also don’t feel the Commission should impose what type of local origination programs a station should program during its mandatory local programming period. Stations will have up to 12 months from license grant to comply with these local origination requirements.
39. *NEPA and electromagnetic radiation protection.* In the case of FM-100 and microradio stations, we feel that since there’s a licensed commercial and/or amateur operator as the technical contact (as suggested in paragraph 33), the requirements for NEPA are met as these operators have experience with and many have been tested on electromagnetic radiation protection. LP-1000 stations should be subject to the same standards and regulations required of full power FM stations.
40. *Political broadcasts.* Any radio station, regardless of its size is a very powerful medium. It is very important that the same political broadcast and equal time regulations that currently apply to full power stations should also apply to all classes of LPFM stations.
41. *Operating hours.* In the case of LP-1000, stations should maintain a minimum operating schedule similar to those required of full power FM stations. We feel that some stations operating as LP-100 and microstations may not have the financial capability of providing an 18-hour a day service. For this reason, we are suggesting the use of frequency coordinators to arrange time sharing agreements between part time LP-100 and microradio stations. LP-100 and microstations that are not proposing at least an 18-hour a day service would be subject to time-sharing with another microstation/LP-100.
42. *License terms.* LPFM stations should be given a 5 year renewable license term. Such a short term would make the station more accountable for it’s local service as well as placing a necessary burden on LPFM licensees to renew their licenses to support the fact they are still interested in providing this local service. We disagree with the concept of a non-renewable license in an effort to “pass the microphone” to others. We feel through proper frequency coordination and time-sharing arrangements in the LP-100 and microradio services, many in crowded urban areas would have their turn at the microphone without having to wait several years for a license to expire.

43. *Construction Permits.* We agree with the Community Radio Coalition that construction permits (CP) should not be trafficked and sold like shares of stock. The CP period for LP-1000 should be 18 months due the extensive requirements for a higher-powered station. The CP period for LP-100 and Microstations should be 12 months. CPs can not be extended for any reason other than a natural disaster.
44. *Regulatory Fees.* For commercial LP-1000 stations we are asking for regulatory fees similar to those of LPTV stations (\$265/yr). For the LP-100 and Microstations, a reasonable regulatory fee not exceeding \$100 per year would be desirable based on the budgets of some of these stations.
45. *Sale of stations.* We feel that LPFM stations could be sold to others as well as our proposed rules regarding multiple ownership (maximum of 5 stations and a donut zone) are met.
46. *Emergency Alert System (EAS).* Since we propose that LP-1000 stations only be licensed to rural areas, it is very important that all LP-1000 licensees participate in EAS and the Commission should impose requirements for monitoring equipment and shut down for non-participation. LP-100 and microradio stations are not powerful enough to provide an effective emergency service and should not be subject to requirements but should be allowed to participate in EAS. LP-100 and microradio stations should voluntarily shut down during national emergencies.
47. *Station identification.* With all of the monikers used to identify radio stations (like "Mix", "Kiss", "Power", etc.), the only thing that gives each station it's individuality is it's call sign. Unlike TV stations, AM and FM stations are required to *speak* their legal call sign, therefore a call sign is more intimate in the minds of listeners than a call sign of a TV or LPTV station. For this reason, we feel that call signs for LP-1000 and LP-100 stations are very important. We are proposing that 4-letter call signs with the suffix "-LF" be assigned. Call signs with conflicting prefixes in the same market will not be assigned; these call signs will be issued on a first come first served basis. If a full power station wanted to use the same call sign as a current LPFM station, the full power station can not force the LPFM to change their call sign. LP-1000 and LP-100 stations would be required to identify with their call sign (with -LF suffix) and city of license once an hour. Microradio stations can opt for "-LF" callsigns but will be assigned as a default, a callsign similar to those assigned to translators (such as K200AA). Microstations would only be required to identify once between 6AM and 9AM, once between 11AM and 1PM and once between 4PM and 6PM. Microstations not operating 24 hours a day would also be required to identify at the beginning and end of their broadcast day.
48. *Inspections & public files.* We agree that LPFM stations be subject to the same rules as full power stations when it comes to stations being made available for inspection. LPFM stations want to comply with the rules just as much as full power stations do. All LPFM stations should maintain a public file. In the case of LP-100 and microradio stations, they should be allowed to place their public files on the Internet in lieu of having a public inspection location since many LP-100 and microradio stations may be operated from private residences.
49. *Shut down stations due to impermissible interference.* We agree that LP-100 and microradio stations should be subject to immediate shutdown in the event of such interference. We feel that LP-100 and microradio stations should be allowed to use any means possible to shut down stations including the use of one-way transmissions on Amateur Radio Service frequencies above 222 MHz (in this case, the person controlling the station must also hold an Amateur Radio Service License) or through the use of commercial frequencies in the private land mobile or Auxiliary Broadcasting services.

VII. APPLICATIONS

50. *Electronic filing.* From what we read in the NPRM, the application process for LPFM would be simpler than the process for full power FM stations. We support the use of electronic filing systems. Some may dispute that the Internet is not widely available to some persons. We disagree. Internet access is available free of charge in many public libraries.

51. *Mutually exclusive (MX) applications.* In the case of LP-1000 stations, we suggest that all MX applications for commercial stations be settled by auctions. In the case of LP-100 and Microradio services, MX issues should be resolved first through frequency coordinators. It may turn out that the LP-100 or Microradio applicants may only want to broadcast part-time could reach a shared time agreement. We feel that lotteries should be avoided in the LP-100 and microradio services.
52. *Frequency Coordinators.* Throughout our comments, we have discussed the utilization of frequency coordinators. Frequency coordinators would exist in as many of the top-50 urban areas as possible. Frequency coordinators would be used to assist potential licensees in finding frequencies and reaching time sharing agreements with other licensees and applicants. We are suggesting that all applications within the top-50 urban areas with coordinators require a statement of coordination prior to the issuance of a CP. Frequency coordinators would not operate for profit and can only charge for actual expenses (rate can be determined by FCC). Frequency coordinators would be accredited by the FCC and must make its database information available via the internet to the FCC and the general public. Frequency coordinators can be LPFM licensees. Frequency coordinators must treat every application fairly and are not permitted to discriminate against any licensee or applicant.
53. *Filing windows.* We agree that filing windows will be required for this service. For the initial applications, the first gate will consist of LP-1000 stations in the rural areas. The second gate will be LP-100 stations in all areas. The third gate will be microradio applications. We feel that there should be two filing windows per year and each window should be a period of 15 business days (3 weeks).
54. *Auctions.* As mentioned earlier, MX applications for LP-1000 commercial stations should be settled by auctions. Due to the secondary nature of LP-100 and microradio stations, we feel that auctions for settling MX applications, especially when some microradio stations may only operate part time would render the service useless. Also, in the case of LP-100 and microradio stations, we do not specify that we classify these stations as either commercial or non-commercial (even though these stations may run commercial) therefore since they are not specifically classified as commercial, they would not be subject to auction.

VIII. INTERNATIONAL NOTIFICATION

55. *Protecting Mexican and Canadian stations.* It is very important for LPFM stations to protect Mexican and Canadian stations. Until a new formal agreement can be reached, we feel that it is necessary to follow second adjacent (as well as third-adjacent in respect to Canada) as well as IF protection as it relates to Mexican and Canadian stations. Even within the border zones, LPFM stations will not be required to protect the second/third adjacent or IF channels of domestic stations.
56. *Distance spacing of LPFM stations.* Based on the data provided in the NPRM, we have attached our suggestions for the distance spacing for LPFM stations.

IX. SUMMARY

57. *In conclusion.* We feel that LPFM stations would serve the public interest by providing additional niche programming to local areas as well as providing some rural communities with their first aural service. Services that would not be available through current rules. We urge the Commission to establish rules to implement all three classes of LPFM with the operating conditions shown in these comments.

Respectfully Submitted

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APPENDIX A – REC NETWORKS’ PROPOSED DISTANCE SPACING FOR LPFM STATIONS.

TABLE 1 - Domestic stations:

Class	A1 (LP-1000)			D1 (LP-100)		D2 (Micro)	
and	Co-Channel	First Adjacent	Second adjacent	Co-Channel	First Adjacent	Co-channel	First Adjacent
A	101	58	33	60	45	55	40
C3	128	74	44	75	55	70	50
B1	128	74	57	90	60	80	55
C2	152	92	57	110	70	100	65
B	152	95	71	130	80	115	75
C1	186	119	75	150	95	130	90
C	212	151	96	160	120	150	115
A1	80	55	...	35	20	35	20
D	56	27	...	25	13	20	10
D1	35*	20*	...	25	13	20	10
D2	25	13	7	4

*-A1 only protects D1 stations located within the top-50 urban areas.

TABLE 2 - Class D2 (Micro) stations operating on Channels 198 and 200 (87.5-87.9) protecting TV Channel 6.

D2 (Micro)			
Channel 6 Type	Ch. 198 (87.5)	Ch. 199 (87.7)	Ch. 200 (87.9)
NTSC	138	200	138
DTV	138	200	138
LPTV	46	89	46

Also applies to Canadian & Mexican Channel 6 stations.

Distance spacing requirements to FM services shown in tables 1, 3 and 4 also apply.

TABLE 3 - Protection of Canadian Stations:
Within 320km of Canadian Border.

	Class A1 (LP-1000)					Class D1 (LP-100)					Class D2 (Micro)				
and	Co-Chan	First Adj	Second Adj	Third Adj	IF	Co-Chan	First Adj	Second Adj	Third Adj	IF	Co-Chan	First Adj	Second Adj	Third Adj	IF
A1	90	48	25	21	4	50	30	21	20	4	46	22	20	19	2
A	111	69	45	41	7	92	50	41	40	7	88	46	40	39	5
B1	128	74	57	53	9	119	66	53	52	9	115	62	52	51	7
B	152	94	71	67	12	143	84	68	66	12	140	80	66	65	10
C1	186	119	93	89	20	178	111	89	88	19	174	107	88	87	18
C	212	151	102	98	28	203	142	99	98	28	200	138	98	97	26

TABLE 4 - Protection of Mexican Stations:
Within 320km of Mexican Border.

Class	A1 (LP-1000)				D1 (LP-100)				D2 (Micro)			
with	Co-Chan	First Adj	2nd Adj	IF	Co-Chan	First Adj	2nd Adj	IF	Co-Chan	First Adj	2nd Adj	IF
A	90	51	26	6	82	42	25	5	78	38	24	4
AA	101	58	31	7	92	49	29	6	88	46	28	5
B1	128	74	46	9	119	66	45	8	115	62	45	7
B	152	95	67	12	143	84	66	11	140	80	65	10
C1	186	119	75	20	178	111	73	19	174	107	72	18
C	212	151	94	28	203	142	92	27	200	138	92	26

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APPENDIX B – LOCATIONS OF THE 50 MAJOR METROPOLITAN AREAS WHERE LP-1000 STATIONS ARE NOT AVAILABLE WITHIN A 100 KM RADIUS.

		Lat.			Long.					Lat.			Long.		
1	New York NY	40	45	6	73	59	39	26	Memphis TN	35	8	46	90	3	13
2	Los Angeles CA	34	3	15	118	14	28	27	Columbus OH	39	47	57	83	0	17
3	Chicago IL	41	52	28	87	38	22	28	Tampa FL	27	56	58	82	27	26
4	Philadelphia PA	39	56	58	75	9	21	29	Portland OR	45	31	6	122	40	35
5	Detroit MI	42	19	48	83	2	57	30	Nashville TN	36	9	33	86	46	55
6	Boston MA	42	21	24	71	3	25	31	New Orleans LA	29	56	53	94	4	10
7	San Francisco CA	37	46	39	122	24	40	32	Denver CO	39	44	58	104	59	22
8	Cleveland OH	41	29	51	81	41	50	33	Providence RI	41	49	32	71	24	41
9	Washington DC	38	53	51	77	0	33	34	Albany NY	42	39	1	73	45	1
10	Pittsburgh PA	40	26	19	80	0	0	35	Syracuse NY	43	3	4	76	9	14
11	St. Louis MO	38	37	45	90	12	22	36	Charleston WV	38	21	1	81	37	52
12	Dallas TX	32	47	9	96	47	37	37	Grand Rapids MI	42	58	3	85	40	13
13	Minneapolis MN	44	58	57	93	15	43	38	Louisville KY	38	14	47	85	45	49
14	Baltimore MD	39	17	26	76	36	45	39	Oklahoma City OK	35	28	26	97	31	4
15	Houston TX	29	45	26	95	21	37	40	Birmingham AL	33	31	1	86	48	36
16	Indianapolis IN	39	46	7	84	30	35	41	Dayton OH	39	45	32	84	11	43
17	Cincinnati OH	39	6	7	84	30	35	42	Charlotte NC	35	13	44	80	50	45
18	Atlanta GA	33	45	10	84	23	37	43	Phoenix AZ	33	27	12	112	4	28
19	Hartford CT	41	46	12	72	40	49	44	Norfolk VA	36	51	10	76	17	21
20	Seattle WA	47	36	32	122	20	12	45	San Antonio TX	29	25	37	98	29	6
21	Miami FL	25	46	37	80	11	32	46	Greenville SC	34	50	50	82	24	1
22	Kansas City MO	39	4	56	94	35	20	47	Winston-Salem NC	36	5	52	80	14	42
23	Milwaukee WI	43	2	19	87	54	15	48	Salt Lake City UT	40	45	23	111	52	26
24	Buffalo NY	42	52	52	78	52	21	49	Wilkes Barre PA	41	14	32	75	53	17
25	Sacramento CA	38	34	57	121	29	41	50	Little Rock AR	34	44	42	92	16	37

APPENDIX C

**MAPS OF SELECTED MAJOR METROPOLITAN AREAS
DETAILING URBAN AREAS WHERE FM-1000
STATIONS ARE NOT AVAILABLE**

New York City-Tri State Region

Los Angeles

Chicago

Baltimore/Washington Area

Phoenix, AZ

San Francisco/Sacramento, CA

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NEW YORK CITY-TRI STATE AREA



Area in **GREEN** is the New York City, NY metropolitan area.

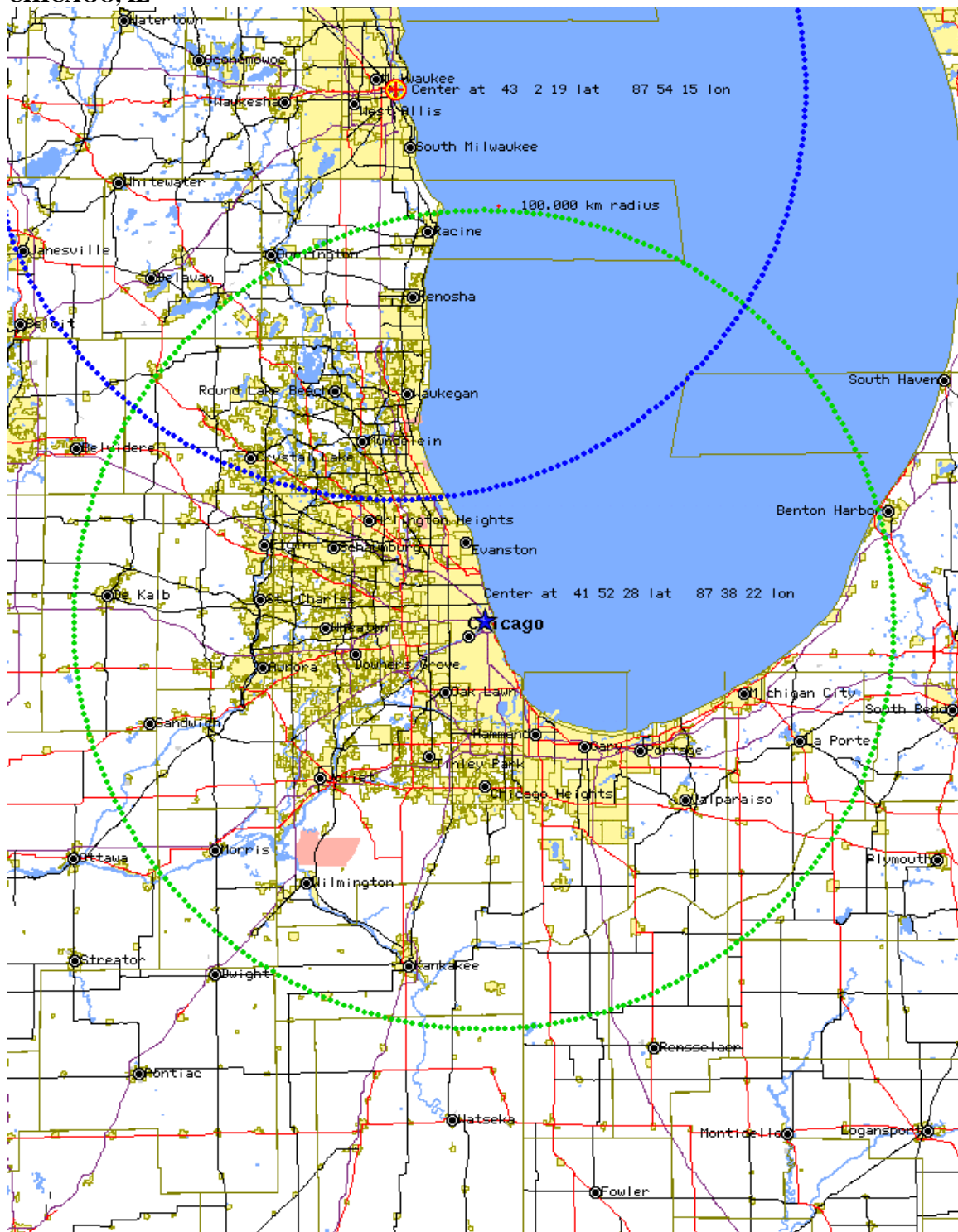
Area in **BLUE** is the Philadelphia, PA metropolitan area.

Area in **RED** is the Albany, NY metropolitan area.

Area in **PURPLE** is the Hartford, CT metropolitan area.

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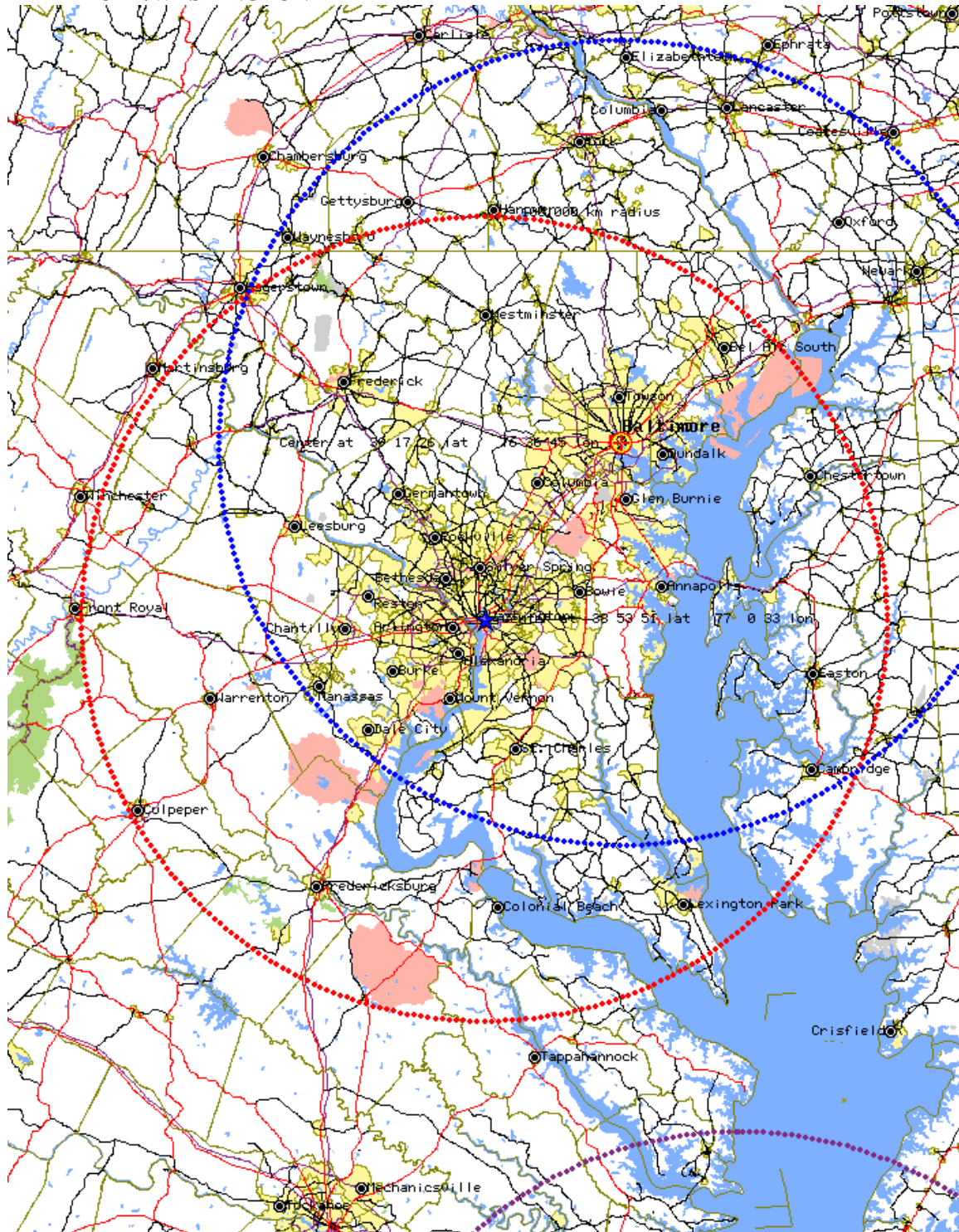
CHICAGO, IL



The area in **GREEN** is the Chicago metropolitan area.
The area in **BLUE** is the Milwaukee metropolitan area.

02/06/1999

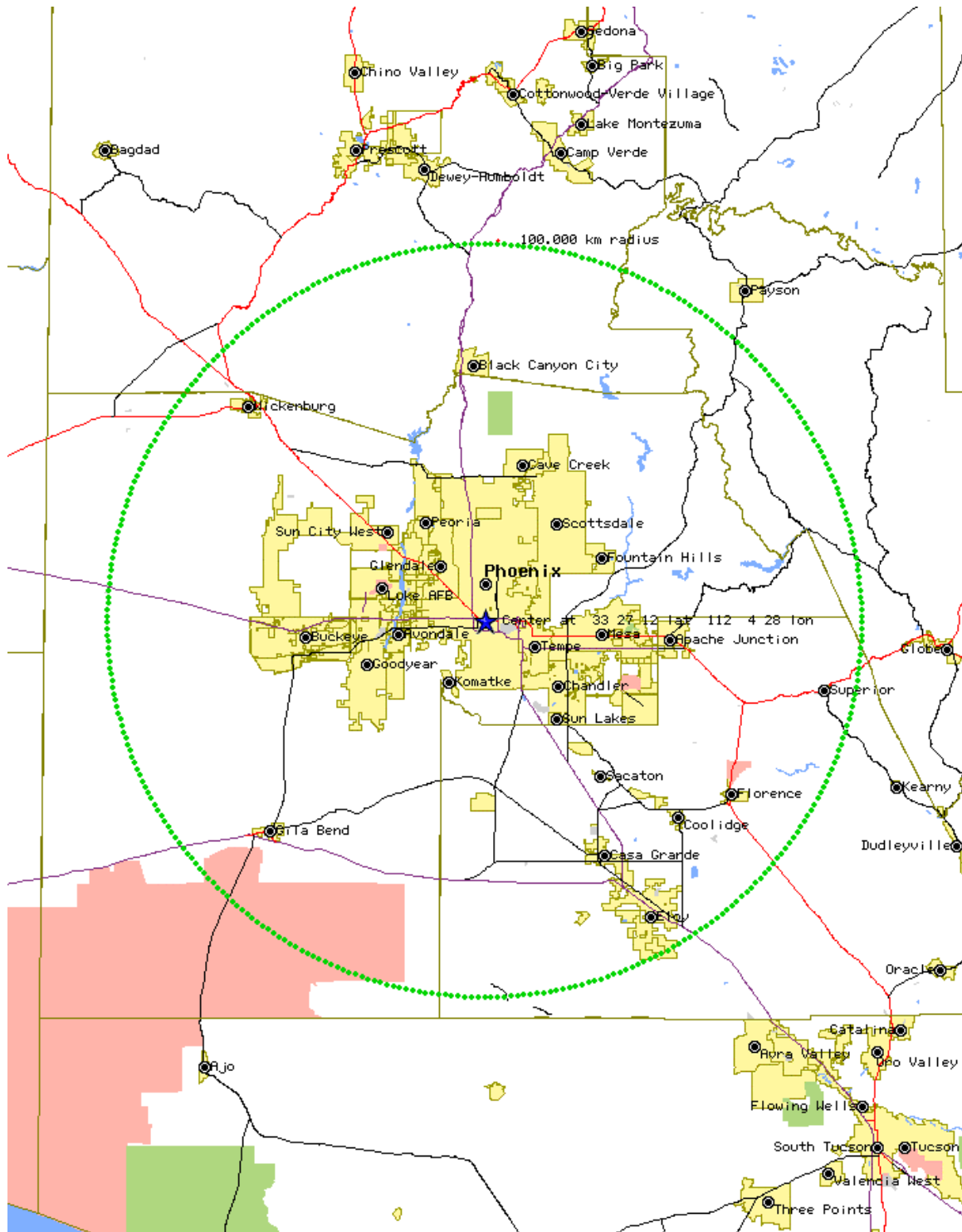
BALTIMORE/WASHINGTON AREA



Area in **RED** is the Washington D.C. metropolitan area.
Area in **BLUE** is the Baltimore metropolitan area.
Area in **PURPLE** is the Norfolk, VA metropolitan area.

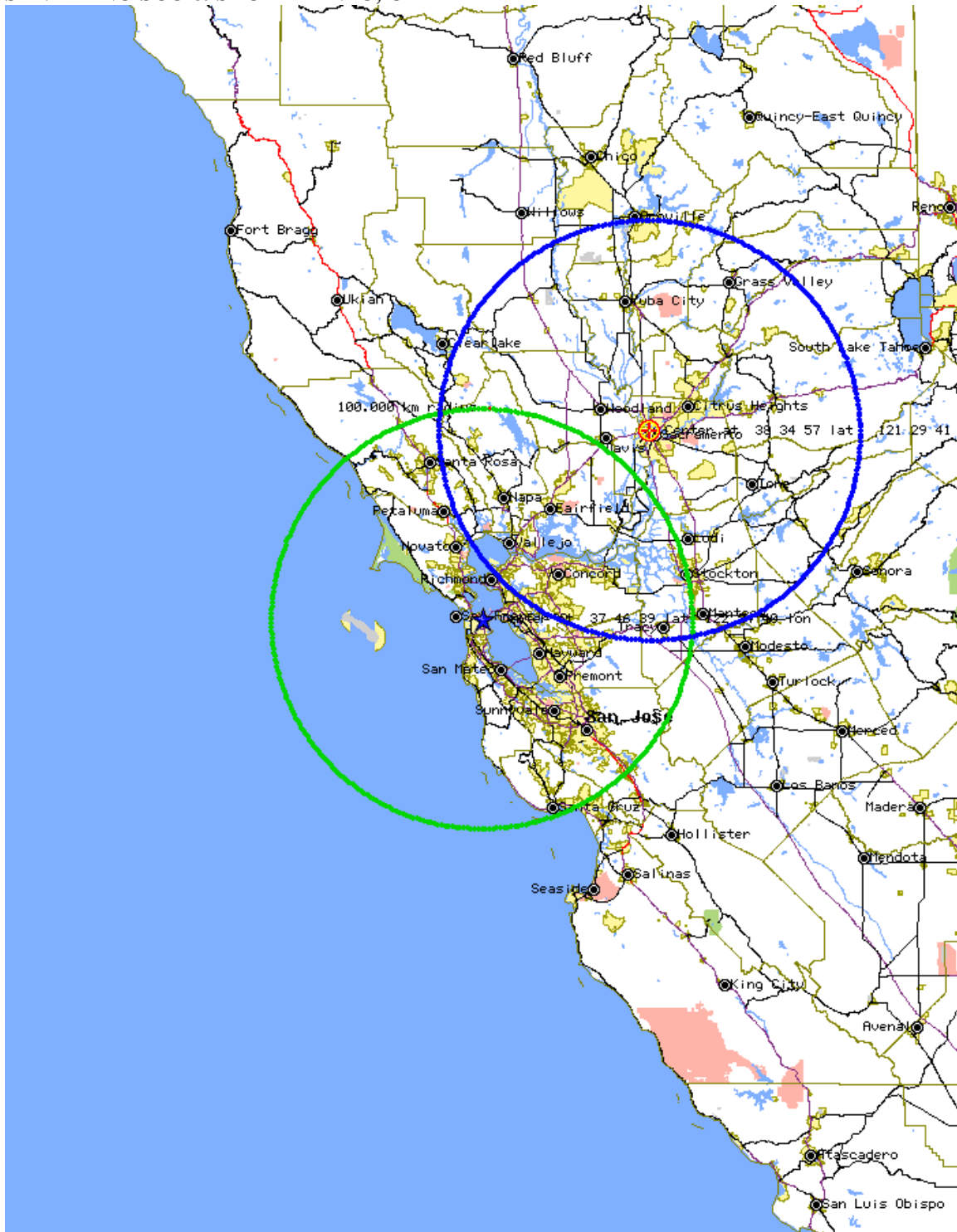
02/06/1999

PHOENIX, ARIZONA



REC Networks comments relating to FCC 99-25

SAN FRANCISCO & SACRAMENTO, CA



The area in **GREEN** is the San Francisco metropolitan area.
The area in **BLUE** is the Sacramento metropolitan area.

APPENDIX D – OUR PROPOSED LPFM SERVICES AT A GLANCE

	LP-1000 (A1)	LP-100 (D1)	Microradio (D2)
Power and Antenna limits	1kW ERP @ 60m HAAT	100W @ 30m HAAT	10W @ 30m HAAT
Minimum power levels	500W	50W	1W
Availability	100km outside of the Top 50 metropolitan areas.	All areas (urban, suburban and rural)	All areas (urban, suburban and rural)
Channels	201-300. (201-220 reserved for non-commercial LP-1000 stations)	201-300 with no reserved channel restrictions.	198-300 with no reserved channel restrictions.
Status of service.	Primary	Secondary	Secondary
Construction Permit	18 months	12 months	12 months
Callsigns	KXXX-LF	KXXX-LF	K200XX (KXXX-LF optional)
Station ID requirements.	Hourly	Hourly	Three times a day.

APPENDIX E – EXAMPLE OF THE TRANSLATORS THAT WOULD NOT BE PROTECTED BY FM-100 AND MICROSTATIONS AS PROPOSED IN PARAGRAPH 17 OF THESE COMMENTS.

(ARIZONA SHOWN)

All translators whose primary stations are more than 400 km away would not be subject to protection from LOCAL secondary LPFM stations:

Translator CallSign	Location	Primary Station	Primary Station Location
K201ER	Holbrook	KCZO	Carrizo Springs, TX
K201CQ	Prescott	KEAR	San Francisco, CA
K204CE	Clifton	WGNR	Monee, IL
NEW-T (204)	Laveen	KSKD	Chowchilla, CA
K205CI	Phoenix	KEAR	San Francisco, CA
K206BL	Dreamland	WAFR	Tupelo, MS
K206BT	Fredonia	WAFR	Tupelo, MS
K208DF	Winslow	KAWZ	Twin Falls, ID
K210CD	Stratton Canyon	WCPS	Pensacola, FL
K210BZ	Phoenix	KEFX	Twin Falls, ID
NEW-T (210)	Mesa	KEFX	Twin Falls, ID
K211DD	Yuma	KEFX	Twin Falls, ID
K212ET	Lake Havasu City	KLVC	Magalia, CA
K212EM	Holbrook	WAFR	Tupelo, MS
K216CV	Scottsdale	KEAR	San Francisco, CA
K217CN	Holbrook	KAWZ	Twin Falls, ID
K217CJ	Winslow	WAFR	Tupelo, MS
K218CV	Springerville	WYFG	Gaffney, SC
K219CG	Pinetop	KAWZ	Twin Falls, ID
NEW-T (220)	Payson	KAWZ	Twin Falls, ID
K220GO	Tempe	KAWZ	Twin Falls, ID
K220GO	Mesa	KAWZ	Twin Falls, ID
K220GI	Camp Verde	KAWZ	Twin Falls, ID
K258AL	Groom Creek	KAWZ	Twin Falls, ID

All existing translators WITHIN 400 km of their primary stations are more capable of providing local news and information and therefore should be subject to protection from secondary LPFM stations as proposed in paragraph 17 of our comments.

APPENDIX F – A LISTING OF SEVERAL RADIOS WHICH COVER CHANNELS 198, 199 & 200.

The purpose of this chart is to show the different radio receivers that I own in an effort to offer testimony that channels 198, 199 and 200 (87.5, 87.7 and 87.9 MHz) is already available on most modern radio receivers and that assigning these channels to LPFM would not cause a burden on the consumer and therefore would be in the public interest. If all these radios cover this band, imagine the percentage of other radios that cover this band already.

Manufacturer	Model	Type Of Radio	Tuning	87.5	87.7	87.9
JVC	PC-W222	Boom Box	Analog	X	X	X
Bose	Wave Radio	Table Radio	Digital	X	X	X
Radio Shack	DX-440	SW Receiver	Digital	X	X	X
Aiwa	NSX-320	Mini System	Digital	X	X	X
Pioneer	RX-760	Component	Digital	X	X	X
Sony	CFD-68	Boom Box	Analog	X	X	X
JVC	RV-B90	Boom Box	Digital	X	X	X
Delco	AM/FM/Cass	Car Stereo	Digital	-	X	X
Kia	AM/FM/Cass	Car Stereo	Digital	X	X	X

APPENDIX G – CHANNEL AVAILABILITY STUDY FOR THE REC NETWORKS LOCATION BASED ON OUR PROPOSED DISTANCE SPACING PLAN.

We did a distance spacing study based on our Tempe, AZ location (33-26'30N 111-54'-40W) using our proposed spacing rules. This is what we came up with:

Chan	Freq.	Avail. For LPFM		Chan	Freq.	Avail. For LPFM	
198	87.5	YES	Micro only (statue)	250	97.9	No	KUPD
199	87.7	No	Co-Ch. KUAT-TV Tucson	251	98.1	No	1st-Adj KUPD
200	87.9	YES	Micro only (statue)	252	98.3	YES	FM-100 & Microstations
201	88.1	No	1st-Adj KPHF/KNAI	253	98.5	No	1st-Adj KKLTV
202	88.3	No	KPHF/KNAI	254	98.7	No	KKLTV
203	88.5	No	1st-Adj KPHF/KNAI	255	98.9	No	1st-Adj KKLTV
204	88.7	No	Co-Ch KNAU Flagstaff (C)	256	99.1	YES	FM-100 & Microstations
205	88.9	No	1st-Adj NEW Fountain Hills	257	99.3	YES	FM-100 & Microstations
206	89.1	No	Co-Ch. NEW Fountain Hills	258	99.5	YES	FM-100 & Microstations
207	89.3	No	1st Adj-KBAQ	259	99.7	No	1st-Adj KESZ
208	89.5	No	Co-Ch. KBAQ Phoenix	260	99.9	No	KESZ
209	89.7	No	1st Adj-KBAQ	261	100.1	No	1st-Adj KESZ
210	89.9	YES	Micro & FM-100	262	100.3	No	Co-Ch KDDJ Globe
211	90.1	No	1st-Adj KFLR	263	100.5	No	1st-Adj KSLX
212	90.3	No	Co-Ch. KFLR	264	100.7	No	KSLX
213	90.5	No	1st-Adj KFLR	265	100.9	No	1st-Adj KSLX
214	90.7	YES		266	101.1	No	Co-Ch KESP Payson
215	90.9	No	Co-Ch KGCB	267	101.3	No	1st-Adj KZON
216	91.1	YES	K216CV(KEAR) unprotected xltr	268	101.5	No	KZON Phoenix
217	91.3	No	1st Adj-KJZZ	269	101.7	No	1st-Adj KZON
218	91.5	No	Co-Ch. KJZZ	270	101.9	YES	FM-100 & Microstations
219	91.7	No	1st Adj-KJZZ	271	102.1	No	Co-Ch KAHM Prescott
220	91.9	No	Co-Ch New FM Globe (C2)	272	102.3	No	1st-Adj KNIX
221	92.1	No	1st-adj KKFR	273	102.5	No	KNIX Tempe
222	92.3	No	Co-Ch KKFR	274	102.7	No	1st-Adj KNIX
223	92.5	No	1st-adj KKFR	275	102.9	No	Co-Ch KQST Sedona
224	92.7	No	Co-Ch K224CJ (KEDJ)	276	103.1	No	K276EB (KLVA) Chandler
225	92.9	YES	MICRO only (distance spacing)	277	103.3	No	1st-Adj KWCY
226	93.1	No	1st-Adj KDKB	278	103.5	No	KWCY
227	93.3	No	Co-Ch KDKB	279	103.7	No	1st-Adj KWCY
228	93.5	No	1st-Adj KDKB	280	103.9	No	KPTY Coolidge
229	93.7	YES	MICRO only (distance spacing)	281	104.1	No	1st-Adj KPTY
230	93.9	YES	Micro & FM-100	282	104.3	No	Co-Ch KBZG
231	94.1	YES	Micro & FM-100	283	104.5	No	1st-Adj KZZP
232	94.3	No	1st-Adj KOOL	284	104.7	No	KZZP
233	94.5	No	Co-Ch KOOL	285	104.9	No	1st-Adj KZZP
234	94.7	No	1st-Adj KOOL	286	105.1	YES	FM-100 & Microstations
235	94.9	YES	MICRO only (distance spacing)	287	105.3	YES	FM-100 & Microstations
236	95.1	YES	Micro & FM-100	288	105.5	No	Co-Ch KLVA
237	95.3	No	1st-Adj KYOT	289	105.7	No	1st-Adj KHOT
238	95.5	No	Co-Ch KYOT	290	105.9	No	KHOT Paradise Valley
239	95.7	No	1st-Adj KYOT	291	106.1	No	1st-Adj KHOT
240	95.9	YES	MICRO only (distance spacing)	292	106.3	No	KEDJ-Sun City
241	96.1	YES	MICRO only (distance spacing)	293	106.5	No	1st-Adj KEDJ
242	96.3	No	K242AG (KLVA)	294	106.7	No	K294AA (KMYL) Mesa
243	96.5	YES	FM-100 & Microstations	295	106.9	No	KMJK-Buckeye
244	96.7	No	1st-Adj KMXP	296	107.1	No	KVVA-Apache Junction
245	96.9	No	KMXP-Phoenix	297	107.3	No	1st-Adj KVVA
246	97.1	No	1st-Adj KMXP	298	107.5	No	Co-Ch KSED Sedona
247	97.3	YES	MICRO only (distance spacing)	299	107.7	No	1st-Adj KMLE
248	97.5	YES	MICRO only (distance spacing)	300	107.9	No	KMLE-Phoenix
249	97.7	No	1st-Adj KUPD				